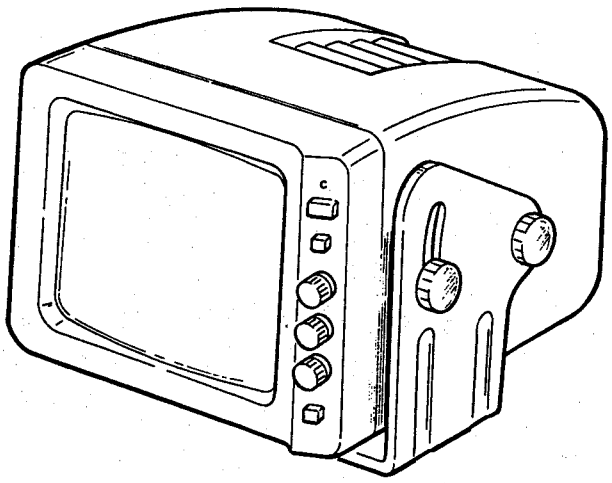
SONY

BLACK AND WHITE MONITOR

SSM-724AMR

SERVICE MANUAL



AUTOMOTIVE WatchCam

TABLE OF CONTENTS

Section	Title	Page
1. GENERAL		3
2. DISASSEMBLY		
2-1.	A Board Removal	8
2-2.	Picture Tube Removal	8
3. SAFETY RELATED ADJUSTMENT		9
4. CIRCUIT ADJUSTMENT		10
5. DIAGRAMS		
5-1.	Schematic Diagram	11
5-2.	Printed Wiring Boards	15
5-3.	Circuit Board Location	16
5-4.	Semiconductors	16
6. REPAIR PARTS		
6-1.	EXPLODED VIEWS	17
6-2.	ELECTRICAL PARTS LIST	18

SAFETY RELATED COMPONENT WARNING

Components identified by shading and ⚠ marked on the schematic diagrams and parts list are critical to safe operation. Replace these components with SONY parts whose part numbers appear as shown in this manual or in supplements published by SONY.

SECTION 1
GENERAL

Features

The SSM-724AMR black and white monitor is designed for Sony Automotive WatchCam system.

- You can use the monitor on 12 V or 24 V car battery.
- The monitor is automatically turned on when you set the gear lever in the R (reverse) position.
- You can connect two cameras to this monitor.

Precautions

Safety

- Operate the unit only on 12 V or 24 V DC.
- Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by a qualified personnel before operating it any further.
- To prevent internal heat build-up, do not block the ventilation openings.

Installation

- Do not place the unit in a location near a heat source (e.g. radiator, airduct, etc.) on in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- The unit is not designed to be waterproof. Exposure to rain or water may damage the unit.

Cleaning and general

- If your car has been parked in direct sunlight resulting in a considerable rise in temperature inside the car, allow the unit to cool off before operating.
- When the casing becomes soiled, clean it with a soft cloth dampened with a mild detergent solution. Never use abrasive cleansers or chemical solvents, as they might damage the casing.
- Retain the original carton and packing materials for safe transport of this unit in the future.

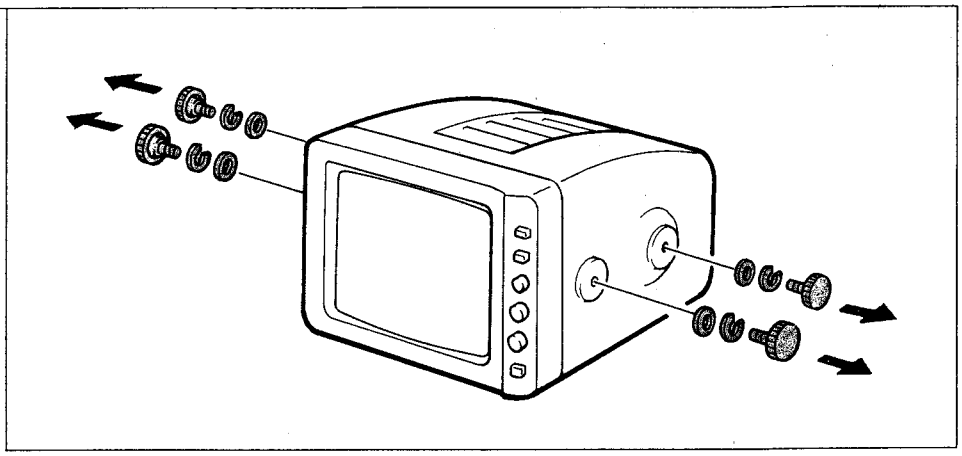
Warning
Do not view TV or video programs while driving.

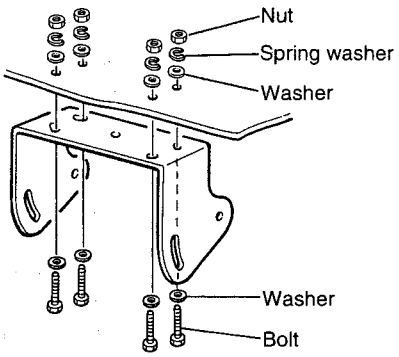
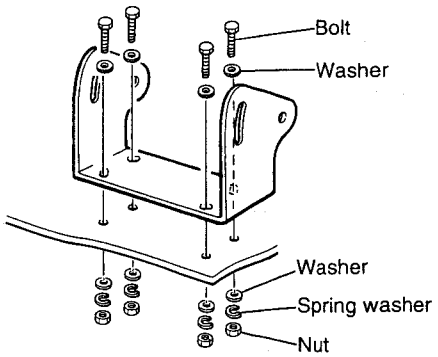
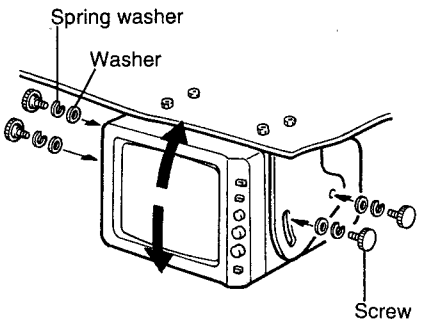
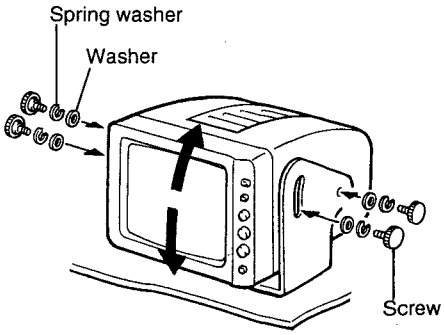
Installation

Notes

- Install the monitor on a surface which holds a weight of more than 10 kg (22 lb).
- Install the monitor away from a speaker mounted in the car so that the picture is not distorted.

1 Remove the four screws from the side panels.

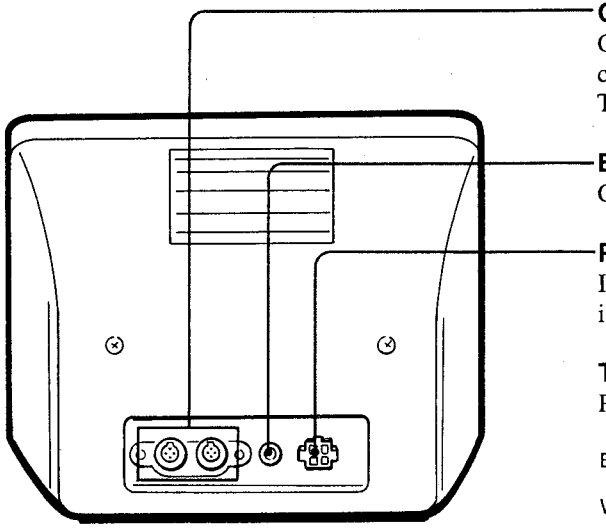


	Mounting on the ceiling	Mounting on the floor, console, etc.
2 Attach the supplied mounting bracket to the ceiling or the floor, etc.		
3 Adjust the angle of the monitor and fasten the screws firmly.		

Connections

Explanation of Connectors

Rear panel

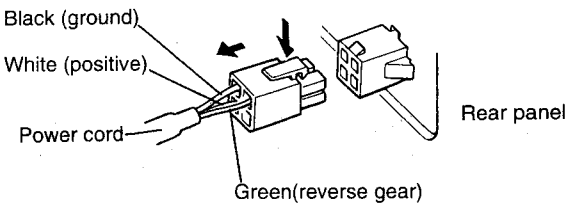


CAMERA input connectors A and B (4-pin multi)
Connect to Sony cameras equipped with 4-pin multi connector.
The SSM-724AMR supplies power to the camera.

EXT SP OUT (external speaker output) jack
Connect an external speaker (not supplied).

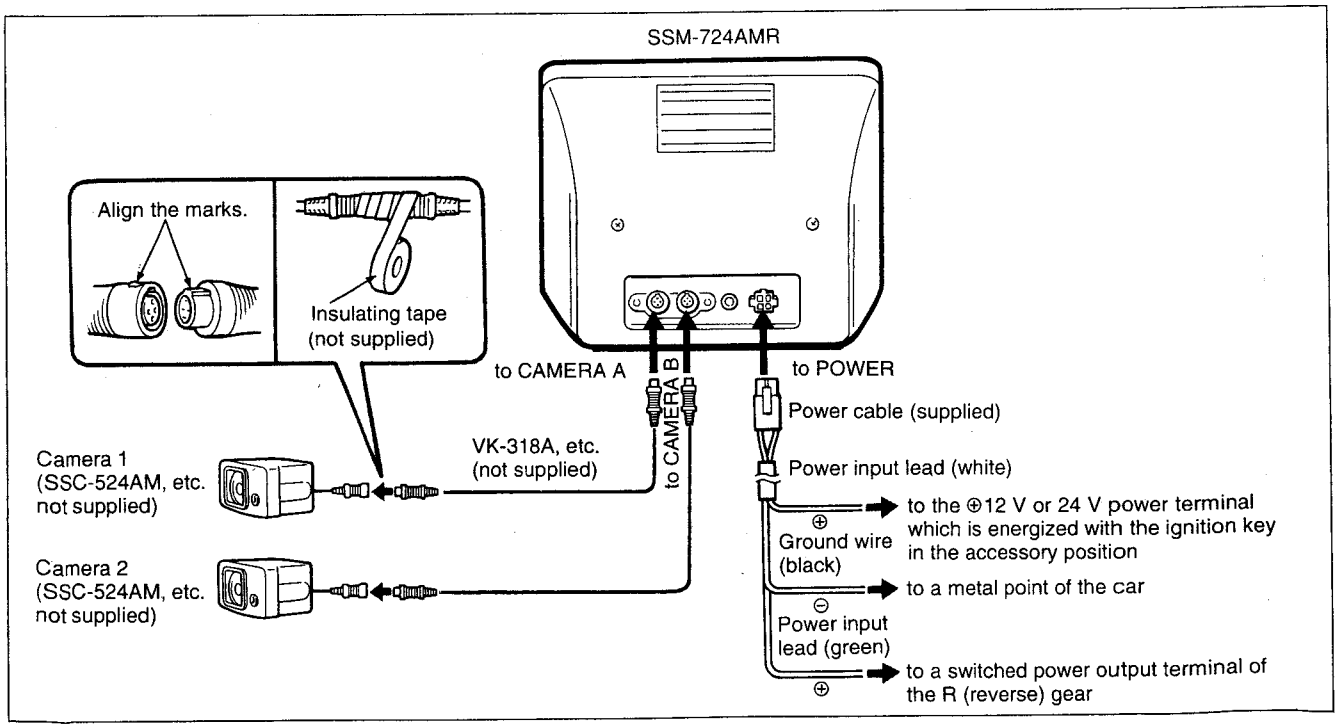
POWER connector jack
Insert the supplied power cable connector firmly until it is locked.

To remove
Push in the clips and pull out the connector.

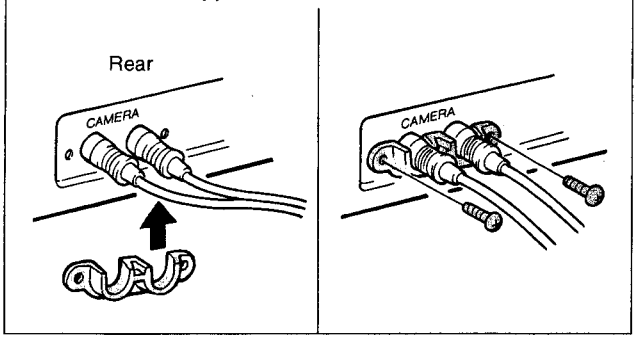


Connections

You can connect one or two camera(s) to the monitor.



How to use the supplied bracket holder

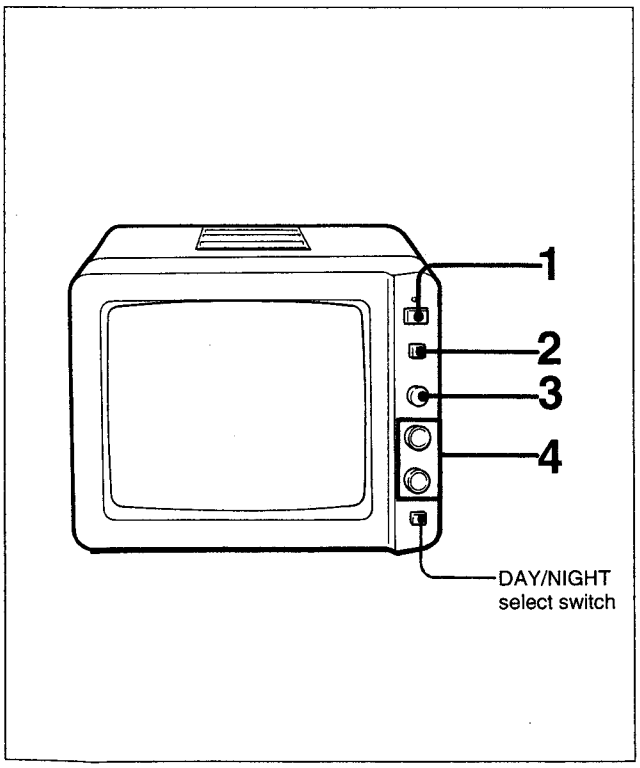


Caution

- Before making the connections, disconnect the ground terminal of the car battery to avoid short circuiting.
- The plugs should be fully inserted into the connectors or jacks. A loose connection may cause the unit to malfunction.
- After connecting the camera cable to the camera connecting cable of the monitor, be sure to insulate the connection with insulating tape to avoid possible leakage.

Operation

When you turn the ignition key to the accessory or ON position, the power is supplied to the monitor and the monitor becomes standby condition.

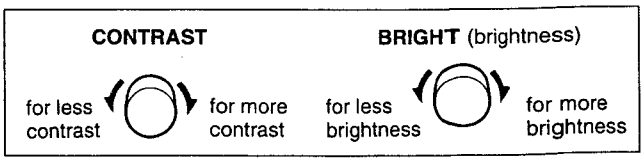


1 Depress the POWER switch (⎍ ON).
The picture appears on the monitor.
To turn off the picture, press it again to release (⎍ STD BY). The monitor becomes standby condition.

2 Select the camera to be monitored by pressing the INPUT button.
To select the camera connected to the CAMERA A connector, depress the button (⎍ A).
To select the camera connected to the CAMERA B connector, press the button to release (⎍ B).

3 Adjust the VOLUME control.

4 Adjust the picture contrast and brightness.



DAY/NIGHT select switch
Normally keep this switch released (⎍ DAY).
When you view the picture at night or in a tunnel, etc., depress the switch to make the picture less bright (⎍ NIGHT). The picture will be easy to view even in a dark place.

Note on the power of the monitor

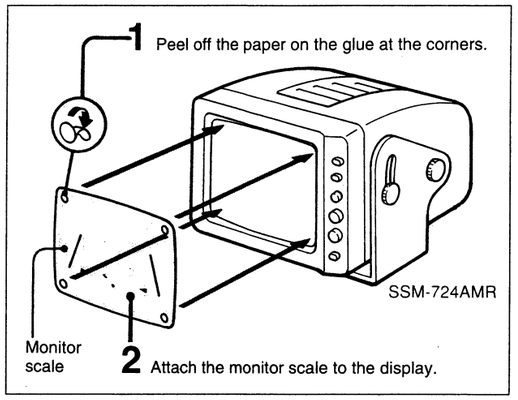
When you press the POWER switch to release, the monitor becomes standby condition. The power is not turned off until you set the ignition key to the OFF position.

When you set the gear lever to the R position with the POWER switch released (⏏ STD BY)

The monitor is turned on and the picture from the camera connected to the CAMERA A connector appears irrespective of the INPUT button setting. Using this feature, connect the "rear view" camera to the CAMERA A connector so that you can view the reversed picture from the "rear view" camera each time you set the gear lever to the R position.

To check the distance between your car and another car or object behind your car

Attach the supplied monitor scale to the display.



Note

Only by attaching the supplied monitor scale, you can know the distance between your car and another car or object behind your car on the display.

Specifications

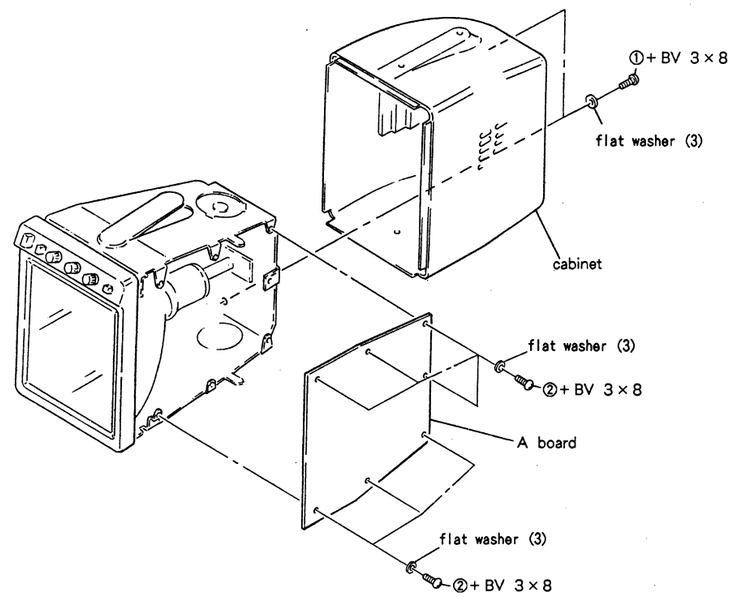
TV System	CCIR standard
Picture tube	Black-and-white 7-inch (176 mm) picture measured diagonally 90-degree deflection angle
Picture image	Factory preset to reverse image
Picture resolution	650 TV lines
Power connector	White: Positive 12 V/24V input Black: Ground Green: Reverse gear 12 V/24 V input
Speaker	Approx. 50 mm (2 inches) dia.
Audio output	0.5 W max. (8 ohms)
Inputs	4-pin multi connector × 2 ① 12 V, 0.2 A DC (output) ② Video input: 1.0 V p-p, 75 ohms, sync negative ③ Ground ④ Audio input: –5 dBs (436 mVrms), 30 kilohms or more
Output	External speaker jack (minijack): impedance 8 ohms
Power requirements	12 V or 24 V DC
Power consumption	23 W (max.)
Operating temperature range	–15°C to + 60°C (5°F to 140°F)
Storage temperature range	–25°C to 85°C (–13°F to +185°F)
Dimensions	Approx. 203 × 151 × 215 mm (w/h/d) (8 1/8 × 6 × 8 1/2 inches)incl. projecting parts and controls
Mass	Approx. 3.2 kg (7 lb), not incl. mounting bracket
Accessories supplied	Mounting bracket (1), Screw (4), Bolt (4), Washer (12), Spring washer (8), Nut (4), Camera bracket holder (1), Power cable (1 set), Monitor scale (1)
Optional accessories	Black-and-white video camera SSC-524AM Camera cable VK-110A (10 m), VK-115A (15 m), VK-120A (20 m) Water-resistant camera cable VK-310A (10 m), VK-318A (18 m), VK-320A (20 m) Water-resistant extension cable VK-305 (5 m) Monitor hood WU-700AM

Design and specifications are subject to change without notice.

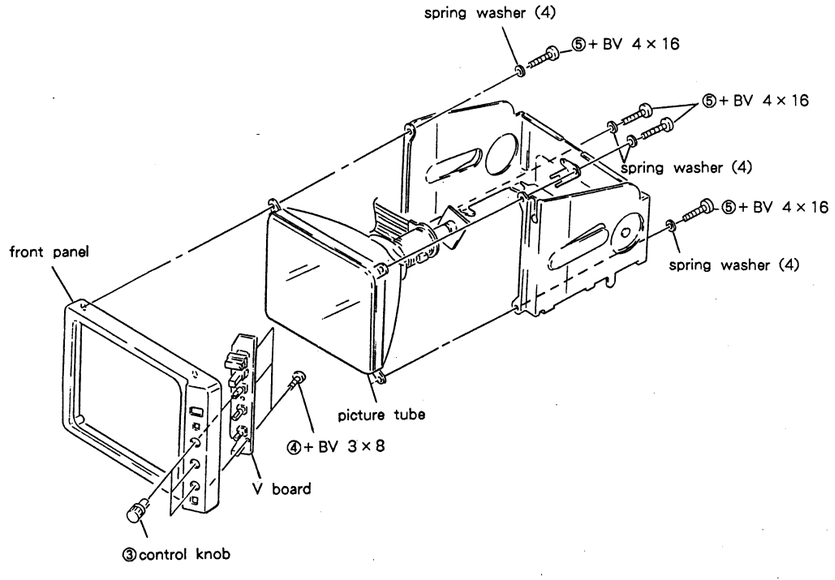
SECTION 2
DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

2-1. A BOARD REMOVAL

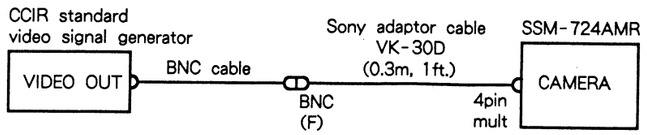


2-2. PICTURE TUBE REMOVAL



SECTION 3
SAFETY RELATED ADJUSTMENT

- Connection



+B VOLTAGE CONFIRMATION (⧓ R606)

The following adjustment should always be performed when replacing R606 or R607 (marked with ◪ on the schematic diagram).

(1) +B VOLTAGE CONFIRMATION

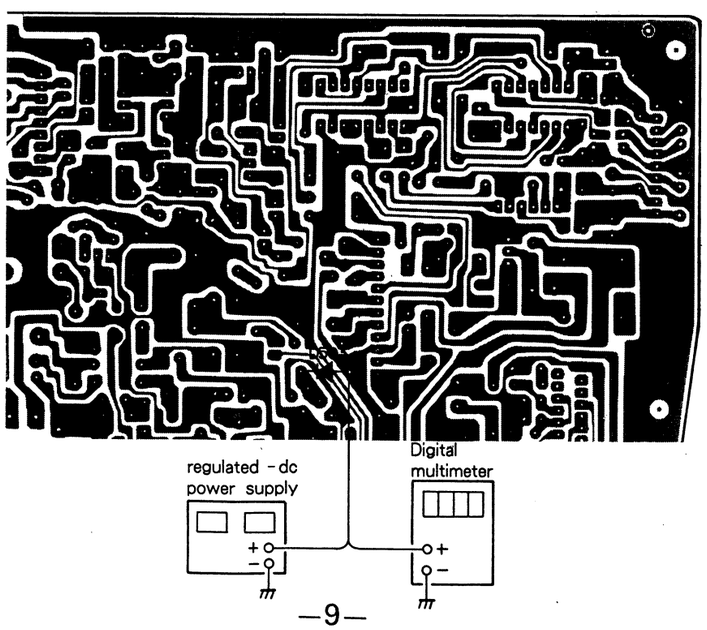
1. Supply 24.0 V DC to the set.
2. Receive monoscope signal.
3. Set controls and switch as follows.
   CONTRAST·····minimum
   BRIGHTNESS·····minimum
   VOLUME·····minimum
   DAY/NIGHT·····NIGHT
4. Confirm the voltage of D503 anode is whithin 11.5 V to 12.5 V DC.
5. If step 4 is not satisfied, replace R606 and repeat above steps. (R606 : 3.3 kΩ to 6.8 kΩ)

HOLD-DOWN CONFIRMATION AND READJUSTMENT (⧓ R812)

The following adjustment should always be performed when replacing R812 or R812 (marked with ◪ on the schematic diagram).

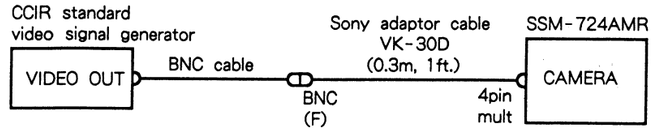
1. Receive monoscope signal.
2. Set controls and switch as follows.
   CONTRAST·····minimum
   BRIGHTNESS·····minimum
   VOLUME·····minimum
   DAY/NIGHT·····NIGHT
3. Apply an external DC voltage gradually to anode of D503, and when the voltage becomes 15.0 V DC, confirm HOLD DOWN circuit operates immediately and raster disappears.
4. When the voltage becomes 12.5 V DC, confirm HOLD DOWN circuit does not operate.
5. If step 3 and 4 are not satisfied, replace R812 and repeat above steps. (R812 : 47 Ω to 68 Ω)

A Board



SECTION 4
CIRCUIT ADJUSTMENT

- Connection

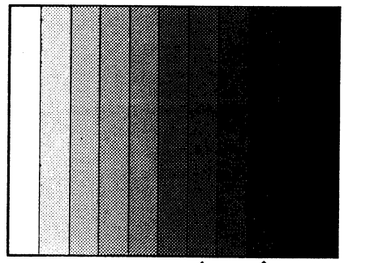


SUB BRIGHTNESS Adjustment (RV702)

- If CRT is replaced, adjust as follows.

1. Receive a 10 step stair case (grey scale) signal.
2. BRIGHTNESS control····· Maximum
   CONTRAST control····· Maximum
   DAY/NIGHT switch ····· DAY
3. Adjust RV702 so that 40 IRE part in 10 step grey scale may light dimly and that 20 IRE part may cut-off.

<STAIR CASE>

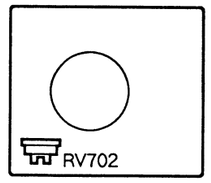


⇧ 20 IRE (cut-off)

40 IRE (lights dimly)

Adjustment point :

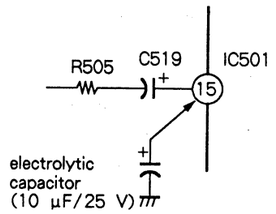
C Board

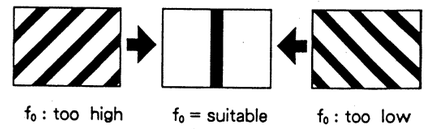


H.HOLD (RV504)

- If semiconductors for oscillation and synchronizing circuit, or RV504 are replaced, adjust as follows.

1. Receive a color-bar signal.
2. CONTRAST····· 50 %
   BRIGHTNESS····· 80 %
3. Connect the electrolytic capacitor (10 μF/25 V) between the pin No.15 of IC501 and GND.
4. Adjust RV504 so that disturbance on the screen stops.
5. Remove the electrolytic capacitor from IC501.

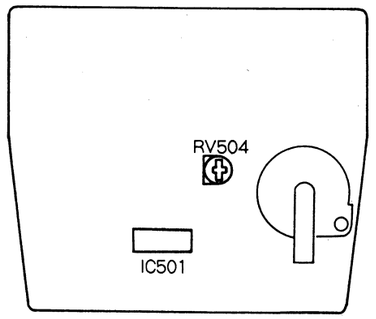




f_0 : too high f_0 = suitable f_0 : too low

Adjustment point :

A Board



SECTION 5
DIAGRAMS

5-1. SCHEMATIC DIAGRAM

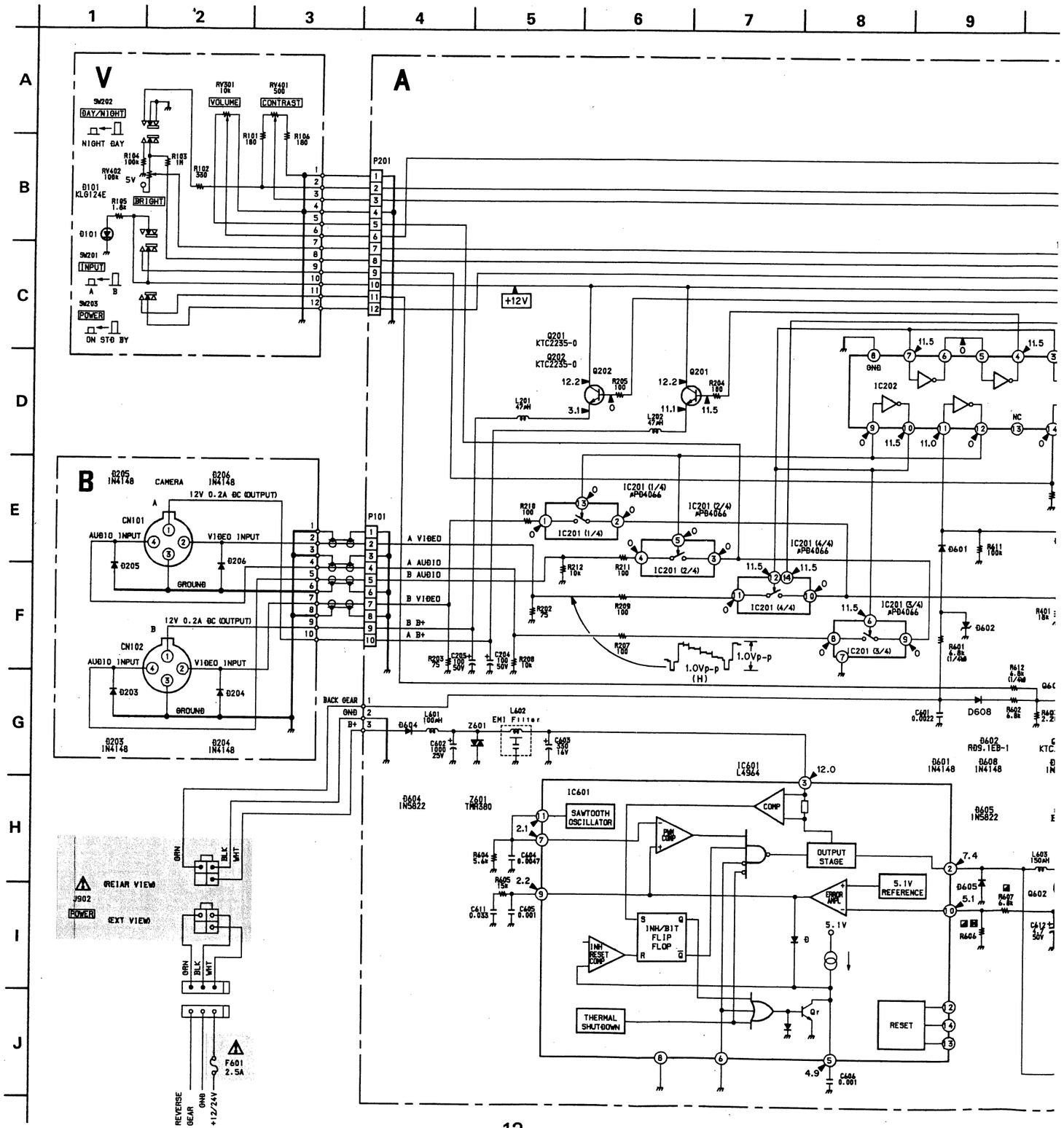
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

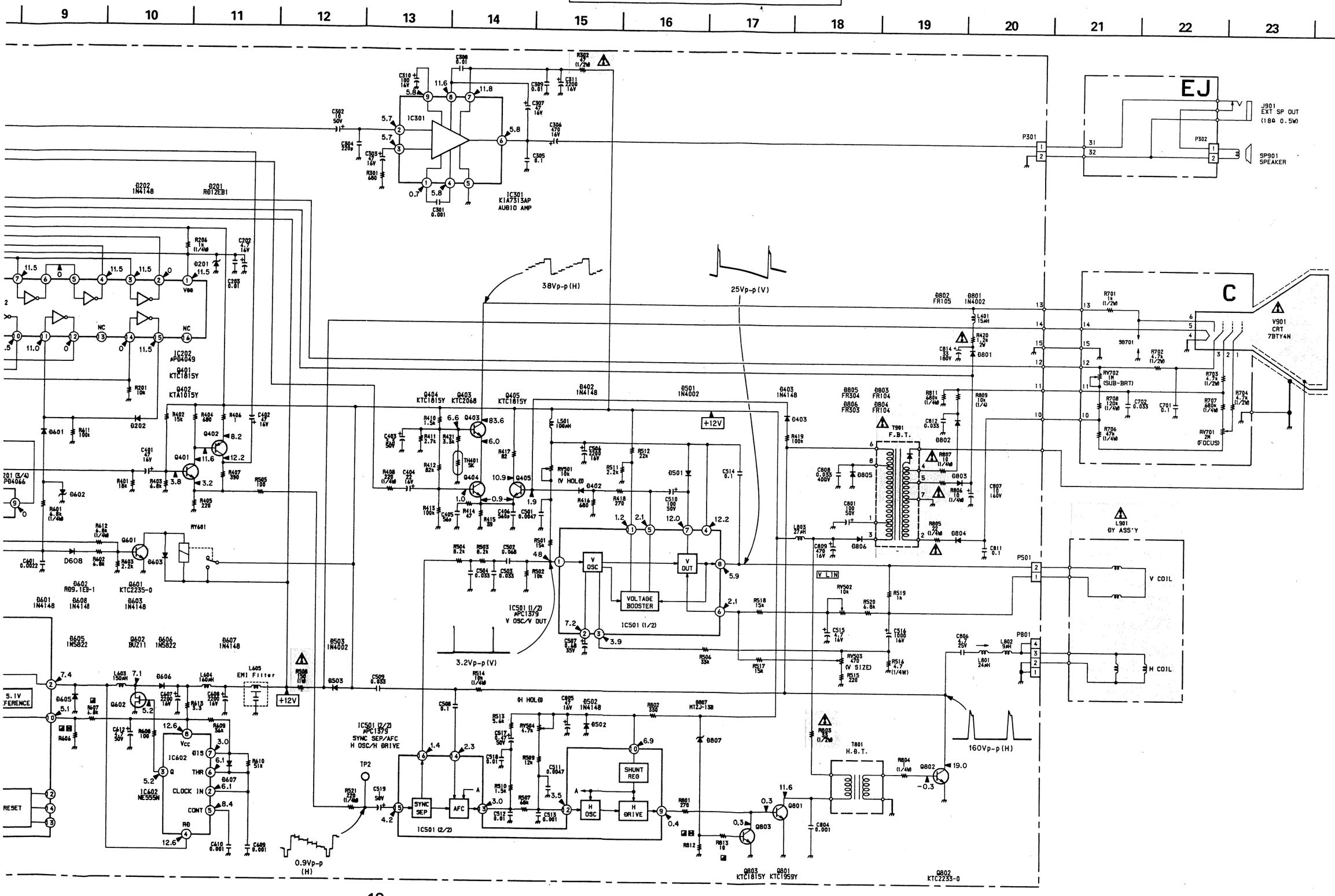
Note:

- All capacitors are in μF unless otherwise noted. p: μμF 50 WV or less are not indicated except for electrolytics.
- All resistors are in ohms, 1/4 W unless otherwise noted. kΩ = 1000 Ω , MΩ = 1000 kΩ
- ⊣NW⊢ :nonflamable resistor.
- [ ] :panel designation.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components indentified by ⊠ in this manual have been carefully factory-selected for each set in order to satisty regulations regarding X-ray radiation. Should replacement be reguired, replace only with the value originally used.
- When replacing components identified by ◪ mark the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ⊠ and repeat the adjustment until the specified value is achieved. (Refer to SECTION 3 SAFETY RELATED ADJUSTMENT on Page 9)
  When replacing the part in below table, be sure to perform the related adjustment.

Part replaced (◪)	Adjustment (⊠)
R606, R607	+ B VOLTAGE CONFIRMATION (R606)
R812, R813	HOLD-DOWN CONFIRMATION AND READJUSTMENT (R812)

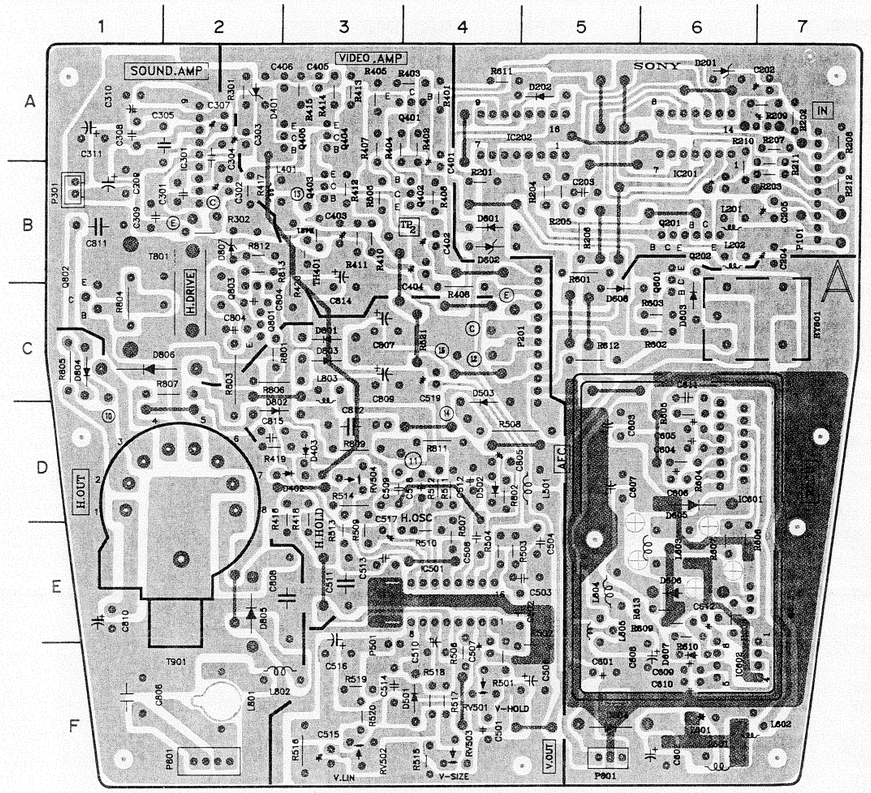
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 10 MΩ digital multimeter.
- Reading are taken with a color-bar signal to CAMERA.
- Voltage variations may be noted due to normal production tolerances.




9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
EJ
J901 EXT SP OUT (18Ω 0.5W)
SP901 SPEAKER
P301
P302
IC301 KIA7313AP AUDIO AMP
38Vp-p(H)
25Vp-p(V)
C
V901 CRT 7BTY4N
V COIL
H COIL
L901 DY ASS'Y
P501
P801
T901 F.B.T.
T801 H.O.T.
IC501 (1/2) APC1379 V OSC/V OUT
IC501 (2/2) APC1379 SYNC SEP/AFC H OSC/H DRIVE
VOLTAGE BOOSTER
SHUNT REG
IC602 NE555N
IC202 μPD4049
160Vp-p(H)
3.2Vp-p(V)
0.9Vp-p (H)
+12V
Q803 KTC1815Y
Q801 KTC1959Y
Q802 KTC2233-0

5-2. PRINTED WIRING BOARDS – Conductor Side –

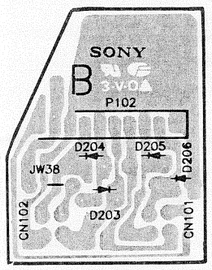
– A Board –



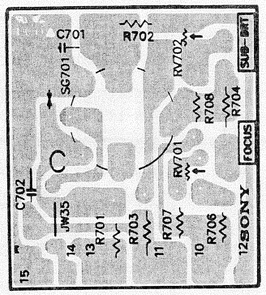
SEMICONDUCTOR LOCATION

Ref.No.	Location
D201	A-6
D202	A-5
D402	D-3
D403	D-3
D501	F-4
D502	D-4
D503	C-4
D601	B-4
D602	B-4
D603	C-6
D604	F-5
D605	D-6
D606	E-6
D607	F-6
D608	C-5
D801	C-3
D802	D-2
D803	C-3
D804	C-1
D805	E-2
D806	C-1
D807	B-2
IC201	A-6
IC202	A-4
IC301	A-2
IC501	E-4
IC601	D-6
IC602	F-6
Q201	B-6
Q202	B-6
Q401	A-4
Q402	B-4
Q403	B-3
Q404	A-3
Q405	A-3
Q601	B-6
Q602	E-7
Q801	C-2
Q802	C-1
Q803	C-2

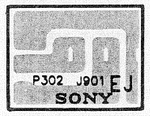
– B Board –



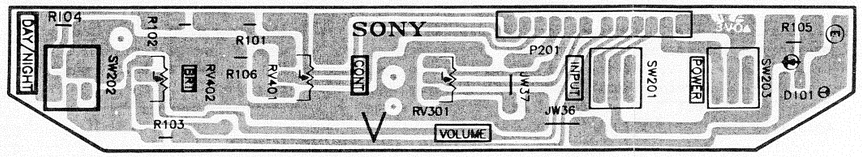
– C Board –



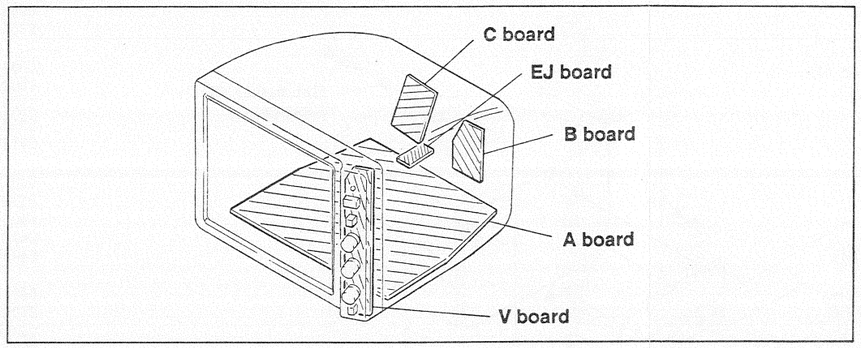
– EJ Board –



– V Board –



5-3. CIRCUIT BOARD LOCATION



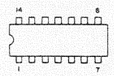
5-4. SEMICONDUCTORS

KIA755P
NE555N

(TOP VIEW)

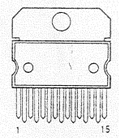
KIA7313AP
TA7313P

GD4066B
MC14066BCP
μPD4066BC

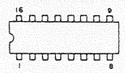


(TOP VIEW)

L4964



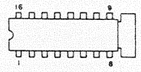
HD14049UBP
TC4049BP



(TOP VIEW)

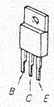
2SA1015 - Y
2SA733 - K
2SC1815 - Y
2SC1959
KTA1015 - Y
KTC1815 - Y
KTC1959 - Y
KTC2235

μPC1379

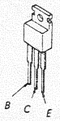


(TOP VIEW)

2SC2068
2SC2373 - L
KTC2068

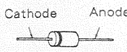


2SC2233
KTC2233
BUZ11

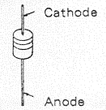


2SC2958 - L

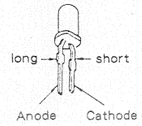
1N4002
1N5822
10E2
FR104
FR105
FR303
FR304
PFR852
PLR813
PLR816
SD - 340



1N4148
1SS119
MTZJ - 13B
RD??EB?
RD??ES - B?



KLG124E
TLG124A



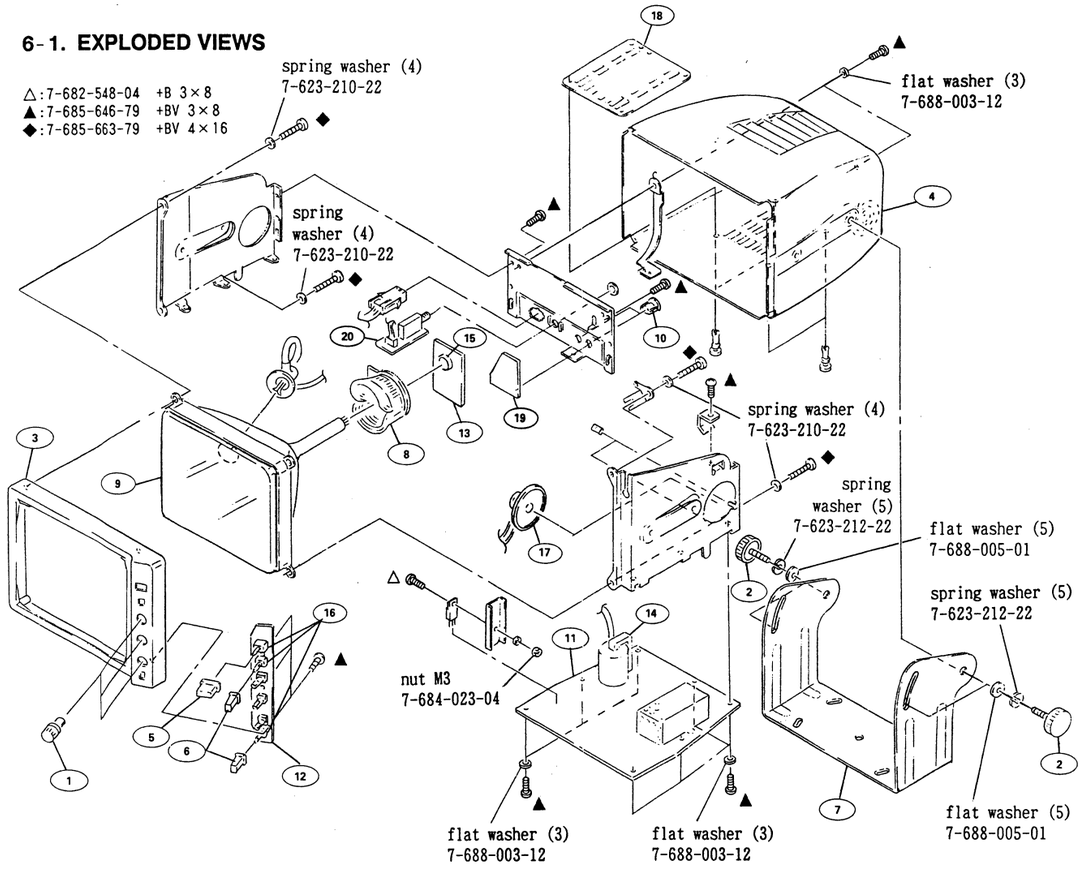
SECTION 6
REPAIR PARTS

【NOTE】

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- All resistors are in ohms.
- Items marked "o" in the SP column are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The components identified by ⊠ in this manual have been carefully factory selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be requied, replace only with the value originaly used.

The components identified by mark ⚠ are critical for safety. Replace only with part number specified.

6-1. EXPLODED VIEWS



No.	Part No.	SP	Description
1	3-708-194-01	s	KNOB, CONTROL
2	3-708-195-01	o	SCREW (M5X20), ORNAMENTAL
3	3-708-634-01	s	PANEL, FRONT
4	3-708-533-01	s	CABINET
5	3-708-534-01	s	KNOB, POWER SWITCH
6	3-708-535-01	s	KNOB, PUSH SWITCH
7	3-708-544-01	o	BRACKET, TILT
8	⚠9-902-898-01	s	DEFLECTION YOKE
9	⚠9-902-899-01	s	PICTURE TUBE (7" B/W)
10	9-902-901-01	s	CONNECTOR, 4P
11	9-905-617-01	o	MOUNTED CIRCUIT BOARD, A
12	9-902-907-01	o	MOUNTED CIRCUIT BOARD, V
13	9-905-619-01	o	MOUNTED CIRCUIT BOARD, C
14	⚠9-994-075-01	s	TRANSFORMER, FLYBACK
15	9-996-353-01	s	SOCKET 7P, CRT
16	9-998-549-01	s	SWITCH, PUSH
17	9-998-550-01	s	SPEAKER
18	9-998-557-01	o	E BOARD
19	9-905-618-01	o	MOUNTED CIRCUIT BOARD, B
20	9-905-620-01	o	MOUNTED CIRCUIT BOARD, EJ

6-2. ELECTRICAL PARTS LIST

A BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	9-905-617-01	o	MOUNTED CIRCUIT BOARD, A
C202	1-131-363-00	s	TANTALUM 4.7uF 20% 20V
C203	1-102-129-00	s	CERAMIC 0.01uF 10% 50V
C204	1-124-122-11	s	ELECT 100uF 20% 50V
C205	1-124-122-11	s	ELECT 100uF 20% 50V
C301	1-130-471-00	s	FILM 0.001uF 5% 50V
C302	1-124-907-11	s	ELECT 10uF 20% 50V
C303	1-124-477-11	s	ELECT 47uF 20% 25V
C304	1-102-978-00	s	CERAMIC 220PF 5% 50V
C305	1-136-165-00	s	FILM 0.1uF 5% 50V
C306	1-126-103-11	s	ELECT 470uF 20% 16V
C307	1-124-477-11	s	ELECT 47uF 20% 25V
C308	1-136-153-00	s	FILM 0.01uF 5% 50V
C309	1-102-129-00	s	CERAMIC 0.01uF 10% 50V
C310	1-126-101-11	s	ELECT 100uF 20% 16V
C311	1-124-556-11	s	ELECT 2200uF 20% 16V
C401	1-124-477-11	s	ELECT 47uF 20% 25V
C402	1-124-477-11	s	ELECT 47uF 20% 25V
C403	1-123-382-00	s	ELECT 3.3uF 20% 100V
C404	1-124-916-11	s	ELECT 22uF 20% 63V
C405	1-101-884-00	s	CERAMIC 56PF 5% 50V
C406	1-102-115-00	s	CERAMIC 560PF 10% 50V
C501	1-130-479-00	s	FILM 0.0047uF 5% 50V
C502	1-136-163-00	s	FILM 0.068uF 5% 50V
C503	1-136-159-00	s	FILM 0.033uF 5% 50V
C504	1-136-159-00	s	FILM 0.033uF 5% 50V
C506	1-126-234-11	s	ELECT 2200uF 20% 16V
C507	1-131-587-11	s	TANTALUM 0.68uF 5% 35V
C508	1-136-165-00	s	FILM 0.1uF 5% 50V
C509	1-136-159-00	s	FILM 0.033uF 5% 50V
C510	1-124-122-11	s	ELECT 100uF 20% 50V
C511	1-136-559-11	s	FILM 0.0047uF 5% 630V
C512	1-136-153-00	s	FILM 0.01uF 5% 50V
C513	1-130-471-00	s	FILM 0.001uF 5% 50V
C514	1-136-165-00	s	FILM 0.1uF 5% 50V
C515	1-131-363-00	s	TANTALUM 4.7uF 20% 20V
C516	1-124-360-00	s	ELECT 1000uF 16V
C517	1-124-902-00	s	ELECT 0.47uF 20% 50V
C518	1-136-153-00	s	FILM 0.01uF 5% 50V
C519	1-124-903-11	s	ELECT 1uF 20% 50V
C601	1-101-002-00	s	CERAMIC 0.0022uF 50V
C602	1-124-360-00	s	ELECT 1000uF 16V
C603	1-124-920-11	s	ELECT 330uF 20% 63V
C604	1-130-479-00	s	FILM 0.0047uF 5% 50V
C605	1-130-471-00	s	FILM 0.001uF 5% 50V
C606	1-130-471-00	s	FILM 0.001uF 5% 50V
C607	1-126-234-11	s	ELECT 2200uF 20% 16V
C608	1-126-234-11	s	ELECT 2200uF 20% 16V
C609	1-130-471-00	s	FILM 0.001uF 5% 50V
C610	1-130-471-00	s	FILM 0.001uF 5% 50V
C611	1-136-159-00	s	FILM 0.033uF 5% 50V
C612	1-124-927-11	s	ELECT 4.7uF 20% 100V
C804	1-130-471-00	s	FILM 0.001uF 5% 50V
C805	1-124-477-11	s	ELECT 47uF 20% 25V
C806	9-991-565-01	s	ELECT, NONPOLAR 4.7uF 20% 25V
C807	1-124-046-00	s	ELECT 10uF 20% 160V
C808	1-129-720-00	s	FILM 0.033uF 10% 630V
C809	1-126-103-11	s	ELECT 470uF 20% 16V

(A BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C810	1-124-122-11	s	ELECT 100uF 20% 50V
C811	1-136-345-21	s	FILM 0.1uF 20% 300V
C812	1-129-720-00	s	FILM 0.033uF 10% 630V
C814	1-123-949-00	s	ELECT 33uF 20% 250V
D201	8-719-110-31	s	DIODE RD12ESB2
D202	8-719-911-19	s	DIODE 1SS119
D402	8-719-911-19	s	DIODE 1SS119
D403	8-719-911-19	s	DIODE 1SS119
D501	8-719-200-02	s	DIODE 10E2
D502	8-719-911-19	s	DIODE 1SS119
D503	8-719-200-02	s	DIODE 10E2
D601	8-719-911-19	s	DIODE 1SS119
D602	8-719-110-13	s	DIODE RD9.1ESB2
D603	8-719-911-19	s	DIODE 1SS119
D604	9-994-066-01	s	DIODE SD-340
D605	9-994-066-01	s	DIODE SD-340
D606	9-994-066-01	s	DIODE SD-340
D607	8-719-911-19	s	DIODE 1SS119
D608	8-719-911-19	s	DIODE 1SS119
D801	8-719-200-02	s	DIODE 10E2
D802	9-996-327-01	s	DIODE PLR816
D803	9-996-326-01	s	DIODE PLR813
D804	9-996-326-01	s	DIODE PLR813
D805	9-902-626-01	s	DIODE FR304
D806	9-991-583-01	s	DIODE FR852
D807	8-719-921-88	s	DIODE MTZJ-13B
IC201	8-759-000-49	s	IC MC14066BCP
IC202	8-759-240-49	s	IC TC4049BP
IC301	1-806-108-11	s	IC TA7313P
IC501	9-998-559-01	s	IC UPC1379
IC601	9-994-068-01	s	IC L4964
IC602	8-759-991-06	s	IC NE555N
L201	9-998-535-01	s	INDUCTOR 47uH
L202	9-998-535-01	s	INDUCTOR 47uH
L401	1-408-411-00	s	INDUCTOR (EL TYPE) 15uH
L501	9-998-536-01	s	INDUCTOR 100uH
L601	9-998-536-01	s	INDUCTOR 100uH
L602	1-235-096-00	s	FILTER, LINE
L603	9-994-074-01	s	COIL, TROIDAL 150uH
L604	9-902-895-01	s	INDUCTOR 160uH
L605	1-235-096-00	s	FILTER, LINE
L801	9-902-896-01	s	COIL, H-WIDTH 24uH
L802	9-902-897-01	s	COIL, H-LINEARTY 9uH
L803	9-996-341-01	s	INDUCTOR 27uH
P301	9-902-902-01	o	CONNECTOR, 2P (MALE) (WHITE)
P501	9-902-902-01	o	CONNECTOR, 2P (MALE) (WHITE)
P801	9-905-616-01	o	CONNECTOR, 4P (MALE) (WHITE)
Q201	8-729-195-82	s	TRANSISTOR 2SC2958-L
Q202	8-729-195-82	s	TRANSISTOR 2SC2958-L
Q401	8-729-281-52	s	TRANSISTOR 2SC1815-Y
Q402	8-729-173-38	s	TRANSISTOR 2SA733-K
Q403	8-729-231-87	s	TRANSISTOR 2SC2068
Q404	8-729-281-52	s	TRANSISTOR 2SC1815-Y
Q405	8-729-281-52	s	TRANSISTOR 2SC1815-Y
Q601	8-729-195-82	s	TRANSISTOR 2SC2958-L
Q602	9-994-079-01	s	TRANSISTOR BUZ11
Q801	8-729-231-83	s	TRANSISTOR 2SC1959

(A BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
Q802	8-729-137-32	s	TRANSISTOR 2SC2373-L
Q803	8-729-281-52	s	TRANSISTOR 2SC1815-Y
R201	1-249-429-11	s	CARBON (SMALL) 10K 5% 1/4W
R202	1-247-804-11	s	CARBON (SMALL) 75 5% 1/4W
R203	1-247-804-11	s	CARBON (SMALL) 75 5% 1/4W
R204	1-249-405-11	s	CARBON (SMALL) 100 5% 1/4W
R205	1-249-405-11	s	CARBON (SMALL) 100 5% 1/4W
R206	1-247-713-11	s	CARBON 1K 5% 1/4W
R207	1-249-405-11	s	CARBON (SMALL) 100 5% 1/4W
R208	1-249-429-11	s	CARBON (SMALL) 10K 5% 1/4W
R209	1-249-405-11	s	CARBON (SMALL) 100 5% 1/4W
R210	1-249-405-11	s	CARBON (SMALL) 100 5% 1/4W
R211	1-249-405-11	s	CARBON (SMALL) 100 5% 1/4W
R212	1-249-429-11	s	CARBON (SMALL) 10K 5% 1/4W
R301	1-249-415-11	s	CARBON (SMALL) 680 5% 1/4W
R302	⚠1-247-735-11	s	CARBON 47 5% 1/2W
R401	1-249-432-11	s	CARBON (SMALL) 18K 5% 1/4W
R402	1-249-431-11	s	CARBON (SMALL) 15K 5% 1/4W
R403	1-249-427-11	s	CARBON (SMALL) 6.8K 5% 1/4W
R404	1-249-415-11	s	CARBON (SMALL) 680 5% 1/4W
R405	1-249-409-11	s	CARBON (SMALL) 220 5% 1/4W
R406	1-249-381-11	s	CARBON (SMALL) 1 5% 1/4W
R407	1-249-412-11	s	CARBON (SMALL) 390 5% 1/4W
R408	1-247-704-11	s	CARBON 220 5% 1/4W
R410	1-249-419-11	s	CARBON (SMALL) 1.5K 5% 1/4W
R411	1-249-422-11	s	CARBON (SMALL) 2.7K 5% 1/4W
R412	1-249-440-11	s	CARBON (SMALL) 82K 5% 1/4W
R413	1-249-441-11	s	CARBON (SMALL) 100K 5% 1/4W
R414	1-249-401-11	s	CARBON (SMALL) 47 5% 1/4W
R415	1-249-400-11	s	CARBON (SMALL) 39 5% 1/4W
R416	1-249-415-11	s	CARBON (SMALL) 680 5% 1/4W
R417	1-249-404-00	s	CARBON (SMALL) 82 5% 1/4W
R418	1-249-410-11	s	CARBON (SMALL) 270 5% 1/4W
R419	1-249-441-11	s	CARBON (SMALL) 100K 5% 1/4W
R420	⚠1-216-457-00	s	METAL 1.2K 5% 2W
R421	1-249-423-11	s	CARBON (SMALL) 3.3K 5% 1/4W
R501	1-249-431-11	s	CARBON (SMALL) 15K 5% 1/4W
R502	1-249-429-11	s	CARBON (SMALL) 10K 5% 1/4W
R503	1-249-428-11	s	CARBON (SMALL) 8.2K 5% 1/4W
R504	1-249-428-11	s	CARBON (SMALL) 8.2K 5% 1/4W
R505	1-249-405-11	s	CARBON (SMALL) 100 5% 1/4W
R506	1-249-435-11	s	CARBON (SMALL) 33K 5% 1/4W
R507	1-249-439-11	s	CARBON (SMALL) 68K 5% 1/4W
R508	⚠1-215-864-00	s	METAL 150 5% 1W
R509	1-249-430-11	s	CARBON (SMALL) 12K 5% 1/4W
R510	1-249-419-11	s	CARBON (SMALL) 1.5K 5% 1/4W
R511	1-249-421-11	s	CARBON (SMALL) 2.2K 5% 1/4W
R512	1-249-433-11	s	CARBON (SMALL) 22K 5% 1/4W
R513	1-249-426-11	s	CARBON (SMALL) 5.6K 5% 1/4W
R514	1-247-725-11	s	CARBON 10K 5% 1/4W
R515	1-249-409-11	s	CARBON (SMALL) 220 5% 1/4W
R516	1-249-455-11	s	CARBON 4.7 5% 1/4W
R517	1-249-431-11	s	CARBON (SMALL) 15K 5% 1/4W
R518	1-249-431-11	s	CARBON (SMALL) 15K 5% 1/4W
R519	1-249-417-11	s	CARBON (SMALL) 1K 5% 1/4W
R520	1-249-427-11	s	CARBON (SMALL) 6.8K 5% 1/4W
R521	1-247-704-11	s	CARBON 220 5% 1/4W
R601	1-247-723-11	s	CARBON 6.8K 5% 1/4W

(A BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R602	1-249-427-11	s	CARBON (SMALL) 6.8K 5% 1/4W
R603	1-249-421-11	s	CARBON (SMALL) 2.2K 5% 1/4W
R604	1-249-426-11	s	CARBON (SMALL) 5.6K 5% 1/4W
R605	1-249-431-11	s	CARBON (SMALL) 15K 5% 1/4W
R606	⊠		CARBON (SMALL) 1/4W
R607	1-249-427-11	s	CARBON (SMALL) 6.8K 5% 1/4W
R608	1-249-405-11	s	CARBON (SMALL) 100 5% 1/4W
R609	1-247-868-11	s	CARBON (SMALL) 36K 5% 1/4W
R610	1-247-872-11	s	CARBON (SMALL) 51K 5% 1/4W
R611	1-249-441-11	s	CARBON (SMALL) 100K 5% 1/4W
R612	1-247-723-11	s	CARBON 6.8K 5% 1/4W
R613	1-249-387-11	s	CARBON (SMALL) 3.3 5% 1/4W
R801	1-249-410-11	s	CARBON (SMALL) 270 5% 1/4W
R802	1-249-411-11	s	CARBON (SMALL) 330 5% 1/4W
R803	⚠1-247-733-11	s	CARBON 33 5% 1/2W
R804	1-249-447-11	s	CARBON 1 5% 1/4W
R805	⚠1-247-692-11	s	CARBON 22 5% 1/4W
R806	⚠1-247-688-11	s	CARBON 10 5% 1/4W
R807	⚠1-247-688-11	s	CARBON 10 5% 1/4W
R809	1-247-725-11	s	CARBON 10K 5% 1/4W
R811	1-246-541-00	s	CARBON 680K 5% 1/4W
R812	⊠		CARBON (SMALL) 1/4W
R813	1-249-393-11	s	CARBON (SMALL) 10 5% 1/4W
RV501	1-238-016-11	s	RES, ADJ CARBON 10K "V-HOLD"
RV502	1-238-016-11	s	RES, ADJ CARBON 10K "V-LIN"
RV503	1-238-011-11	s	RES, ADJ CARBON 470 "V-SIZE"
RV504	1-238-015-11	s	RES, ADJ CARBON 4.7K "H-HOLD"
RY601	9-998-547-01	s	RELAY
T801	9-996-345-01	s	TRANSFORMER, H-DRIVE
T901	⚠9-994-075-01	s	TRANSFORMER, FLYBACK
TH401	9-902-893-01	s	THERMISTOR
Z601	1-808-003-11	s	VARISTOR

B BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	9-905-618-01	o	MOUNTED CIRCUIT BOARD, B (including 10P HARNESS)
CN101	9-902-901-01	s	CONNECTOR, 4P "CAMERA A"
CN102	9-902-901-01	s	CONNECTOR, 4P "CAMERA B"
D203	8-719-911-19	s	DIODE 1SS119
D204	8-719-911-19	s	DIODE 1SS119
D205	8-719-911-19	s	DIODE 1SS119
D206	8-719-911-19	s	DIODE 1SS119

C BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	9-905-619-01	o	MOUNTED CIRCUIT BOARD, C
1pc	9-996-353-01	s	SOCKET 7P, CRT
C701	1-136-345-21	s	FILM 0.1uF 20% 300V
C702	1-129-720-00	s	FILM 0.033uF 10% 630V
R701	1-247-752-11	s	CARBON 1K 5% 1/2W
R702	1-247-760-11	s	CARBON 4.7K 5% 1/2W
R703	1-247-760-11	s	CARBON 4.7K 5% 1/2W
R704	1-247-760-11	s	CARBON 4.7K 5% 1/2W
R706	1-249-465-11	s	CARBON 47K 5% 1/4W
R707	1-246-541-00	s	CARBON 680K 5% 1/4W
R708	1-247-881-00	s	CARBON 120K 5% 1/4W
RV701	9-996-333-01	s	RES, ADJ METAL 2M "FOCUS"
RV702	9-996-331-01	s	RES, ADJ METAL 1M "SUB-BRT"
SG701	1-519-030-00	s	DISCHARGE ELEMENT 1KV

EJ BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	9-905-620-01	o	MOUNTED CIRCUIT BOARD, EJ
J901	9-902-900-01	s	JACK, EARPHONE
P302	9-902-902-01	o	CONNECTOR, 2P (MALE) (WHITE)

V BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	9-902-907-01	o	MOUNTED CIRCUIT BOARD, V (including 12P HARNESS)
D101	8-719-812-43	s	LED TLG124A, GRN
R101	1-249-408-11	s	CARBON (SMALL) 180 5% 1/4W
R102	1-249-411-11	s	CARBON (SMALL) 330 5% 1/4W
R103	1-249-441-11	s	CARBON (SMALL) 100K 5% 1/4W
R104	1-247-903-00	s	CARBON (SMALL) 1M 5% 1/4W
R105	1-249-420-11	s	CARBON (SMALL) 1.8K 5% 1/4W
R106	1-249-408-11	s	CARBON (SMALL) 180 5% 1/4W
RV301	9-996-540-01	s	RES, VAR CARBON 10K "VOLUME"
RV401	9-996-538-01	s	RES, VAR CARBON 500 "CONT"
RV402	9-902-894-01	s	RES, VAR CARBON 100K "BRT"
SW201	9-998-549-01	s	SWITCH, PUSH "INPUT"
SW202	9-998-549-01	s	SWITCH, PUSH "DAY/NIGHT"
SW203	9-998-549-01	s	SWITCH, PUSH "POWER"

FRAME

Ref. No. or Q'ty	Part No.	SP	Description
L901	⚠9-902-898-01	s	DEFLECTION YOKE
SP901	9-998-550-01	s	SPEAKER
V901	⚠9-902-899-01	s	PICTURE TUBE (7" B/W)

PACKING MATERIALS & SUPPLIED ACCESSORIES

Ref. No. or Q'ty	Part No.	SP	Description
4pcs	3-708-208-01	o	BOLT (M6X25), HEXAGON
1pc	3-708-536-01	s	HOLDER, 4P
1pc	3-708-537-01	s	SCALE, 7" MONITOR
1pc	3-708-554-01	o	CUSHION (UPPER)
1pc	3-708-555-01	o	CUSHION (LOWER)
1pc	⚠3-708-630-01	s	MANUAL, INSTRUCTION
1pc	3-708-633-01	o	INDIVIDUAL CARTON
1pc	4-932-554-01	o	BAG, PROTECTION
4pcs	7-623-213-22	s	SPRING WASHER (6), TYPE 2
4pcs	7-684-026-04	s	NUT 6, TYPE 2
2pcs	7-685-646-79	s	SCREW +BV 3X8 TYPE2
8pcs	7-688-006-01	s	PLAIN WASHER 6, SMALL
1pc	9-902-904-01	s	POWER CABLE (A)
1pc	⚠9-902-905-01	s	POWER CABLE (B) (WITH FUSE)